International Journal of

IMPACT ENGINEERING

Volume Contents and Author Index
Volume 3 (1985)

VOL.
3
1985

PERGAMON PRESS

Oxford · New York · Toronto · Sydney · Frankfurt

INTERNATIONAL JOURNAL OF IMPACT ENGINEERING

Editor-in-Chief: Professor W. Johnson
Ridge Hall, Chapel-en-le-Frith, via Stockport SK12 6UD, U.K.

Editor: Professor Norman Jones
Department of Mechanical Engineering, University of Liverpool, P.O. Box 147,
Liverpool L69 3BX, U.K.

Associate Editor: Professor S. R. Reid
Applied Mechanics Division, Department of Mechanical Engineering, UMIST,
Manchester M60 1QD, U.K.

EDITORIAL ADVISORY BOARD

Y. L. Bai
Institute of Mechanics
Academia Sinica
Peking, People's Republic of China

V. L. Biderman
Bauman Institute
Moscow, U.S.S.R.

S. R. Bodner
Faculty of Mechanical Engineering
Technion-Israel Institute of Technology
Haifa, Israel

N. Cristescu
Department of Mechanics
University of Bucharest
Bucharest 70109, Romania

A. A. Deribas
U.S.S.R. Academy of Sciences
Novosibirsk 90, U.S.S.R.

W. Goldsmith
Department of Applied Mechanics
University of California, Berkeley
CA 94720, U.S.A.

N. K. Gupta
Department of Applied Mechanics
Indian Institute of Technology
Delhi, Hauz Khas
New Delhi-110029, India

K. Kawata
Science University of Tokyo
Faculty of Science and Technology
Department of Mechanical
Engineering, 2641 Yamazaki
Noda 278, Japan

H. Lippmann
Lehrstuhl für Mechanik
Technische Universitat München
8 München, Postfach 20 24 20,
F.R.G.

J. B. Martin
Department of Civil Engineering
University of Cape Town
Private Bag, Rondebosch
Cape Town, South Africa

✠ A. Sawczuk
Laboratoire de Mechanique et
d'Acoustique
13277 Marseille, France

Paul S. Symonds
Division of Engineering
Brown University
Providence
RI 02912, U.S.A.

P. S. Theocaris
Department of Mechanics
Athens National Technical University
Athens, Greece

W. H. Wittrick
Birmingham, U.K.

R. L. Woodward
Department of Defence
Materials Research Laboratories
Ascot Vale
Victoria 3032, Australia

J. Zukas
Computational Mechanics Associates
Baltimore
MD 21239, U.S.A.

Publishing, Subscription and Advertising Offices:
Headington Hill Hall, Oxford OX3 0BW, U.K. (*Phone* Oxford 64881, *telex* 83177)

Annual subscription rates (1986). For libraries, research establishments and all other multiple reader institutions U.S.$90.00 (including postage and insurance). Two-year rate (1986-1987): U.S.$171.00. *Specially reduced rates to individuals:* In the interests of maximizing the dissemination of the research results published in this important international journal we have established a two-tier price structure. Individuals whose institution takes out a library subscription may purchase a second or additional subscription for personal use at the much reduced rate of U.S.$50.00. Subscription enquiries from customers in North America should be sent to: Pergamon Press Inc., Maxwell House, Fairview Park, Elmsford, NY 10523, U.S.A., and for the remainder of the world to: Pergamon Press Ltd, Headington Hill Hall, Oxford OX3 0BW, U.K.

Microform Subscriptions and Back Issues

Back issues of all previously published volumes are available in the regular editions and on microfilm and microfiche. Current subscriptions are available on microfiche simultaneously with the paper edition, and on microfilm on completion of the annual index at the end of the subscription year.

Copyright © 1985 Pergamon Press Ltd. Published quarterly

It is a condition of publication that manuscripts submitted to this journal have not been published and will not be simultaneously submitted or published elsewhere. By submitting a manuscript, the authors agree that the copyright for their article is transferred to the publisher if and when the article is accepted for publication. However, assignment of copyright is not required from authors who work for organizations which do not permit such assignment. The copyright covers the exclusive rights to reproduce and distribute the article, including reprints, photographic reproductions, microform or any other reproductions of similar nature and translations. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, electrostatic, magnetic tape, mechanical, photocopying, recording or otherwise, without permission in writing from the copyright holder.

Photocopying Information for Users in the U.S.A.

The Item-fee Code for this publication indicates that authorization to photocopy items for internal or personal use is granted by the copyright holder for libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service provided the stated fee for copying, beyond that permitted by Section 107 or 108 of the United States Copyright Law, is paid. The appropriate remittance of $3.00 per copy per article is paid directly to the Copyright Clearance Center Inc., 21 Congress Street, Salem, MA 01970. The copyright owner's consent does not extend to copying for general distribution, for promotion, for creating new works, or for resale. Specific written permission must be obtained from the publisher for such copying. In case of doubt please contact your nearest Pergamon office.

The Item-fee Code for this publication is: 0734-743X/85 $3.00 + 0.00

Headington Hill Hall, Oxford OX3 0BW, U.K. PERGAMON PRESS Maxwell House, Fairview Park, Elmsford, NY 10523, U.S.A.

VOL
3
198

Contents

Number 1

Ma Xiaoqing and W. J. Stronge	1	Spherical missile impact and perforation of filled steel tubes
G. N. Nurick	17	A new technique to measure the deflection-time history of a structure subjected to high strain rates
S. Kumar and H. J. Petroski	27	Plastic response to impact of a simply supported beam with a stable crack
D. E. Manolakos and A. G. Mamalis	41	On ship collisions: the plastic collapse of longitudinally framed shell plating subjected to oblique loading
S. Holasut and C. Ruiz	57	Effect of an impulsive disturbing load on the stability of a statically loaded structure
Announcement and Call for Papers	75	

VOL. 3 1985

Number 2

Ü. Lepik	77	Optimal design of elastic beams with segmentwise constant height in the case of dynamic loading
Y. Sarig, R. W. Little and L. J. Segerlind	93	Comparative solutions for a punch problem of an elastic sphere encapsulated in an elastic shell
D. Z. Yankelevsky	107	Elasto-plastic blast response of rectangular plates
N. K. Gupta and W. Johnson	121	Rate effects in lateral compression, for an energy-absorbing unit of crossed layers of wooden bars
A. J. Neilson	137	Empirical equations for the perforation of mild steel plates

Number 3

T. X. Yu, Y. L. Hua and W. Johnson	143	The plastic hinge position in a circular cantilever when struck normal to its plane by a constant jet at its tip
R. H. Grzebieta and N. W. Murray	155	The static behaviour of struts with initial kinks at their centre point
D. Z. Yankelevsky	167	Cavitation phenomena in soil–projectile interaction
Zhenqiu Huang and Jianhui Liu	179	Rigid–plastic analysis of beam grillages under blast type loading
J. R. Klepaczko	191	Fracture initiation under impact
	211	Announcements

Number 4

H. S. Yadav and N. K. Gupta	217	Study of collapse of a free surface conical cavity due to a plane or spherical shock wave
Y. L. Hua, T. X. Yu and W. Johnson	233	The plastic hinge position in a bent cantilever struck normal to its plane by a steady jet applied at its tip
R. Trossbach and J. B. Martin	243	Large deformations of rigid-viscoplastic cantilevers under impulsive loading
J. M. Yellup and D. S. Saunders	259	Phenomenological aspects of a modified fragmentation test using small quantities of explosive
N. Jones	273	Bounds on the dynamic plastic behaviour of structures including transverse shear effects
W. Goldsmith	293	Letter to the Editor
P. S. Theocaris	293	Reply
	297	Announcements
	i	Volume Contents and Author Index (1985)

VOL
3
198

Author Index

Goldsmith, W. 293
Grzebieta, R. H. 155
Gupta, N. K. 121, 217

Holasut, S. 57
Hua, Y. L. 143, 233
Huang, Z. 179

Johnson, W. 121, 143, 233
Jones, N. 273

Klepaczko, J. R. 191
Kumar, S. 27

Lepik, U. 77
Little, R. W. 93
Liu, J. 179

Mamalis, A. G. 41
Manolakos, D. E. 41
Martin, J. B. 243
Murray, N. W. 155

Neilson, A. J. 137
Nurick, G. N. 17

Petroski, H. J. 27

Ruiz, C. 57

Sarig, Y. 93
Segerlind, L. J. 93
Stronge, W. J. 1
Saunders, D. S. 259

Theocaris, P. S. 293
Trossbach, R. 243

Xiaoqing, M. 1

Yadav, H. S. 217
Yankelevsky, D. Z. 107, 167
Yellup, J. M. 259
Yu, T. X. 143, 233

VOL.
3
1985